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ATTORNEY DOCKET NO. CSAY-0020 PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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In re Application of:	James E. Flowers, *et al.*
Serial No.:	09/755,991
Filed:	January 5, 2001
Title:	HERMETICALLY SEALED DUAL-BAND SURFACE ACOUSTIC WAVE CIRCUIT MODULE
Grp./A.U.:	2834
Examiner:	P. Cuevas

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Commissioner for Patents
Washington, D.C. 20231

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Sirs:

APPELLANTS' BRIEF UNDER 37 C.F.R. §1.192

This is an appeal from a Final Rejection dated September 11, 2002, of Claims 1-7 and 15-21. The Appellants submit this Brief in triplicate as required by 37 C.F.R. §1.192(a), with the statutory fee of $ 160.00 as set forth in 37 C.F.R.§1.17(c), and hereby authorize the Commissioner to charge

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any additional fees connected with this communication or credit any overpayment to Deposit Account No. 08-2395.

This Brief contains these items under the following headings, and in the order set forth below in accordance with 37 C.F.R. §1.192(c):

I. REAL PARTY IN INTEREST

II. RELATED APPEALS AND INTERFERENCES

III. STATUS OF CLAIMS

IV. STATUS OF AMENDMENTS

V. SUMMARY OF INVENTION

VI. ISSUES

VII. GROUPING OF CLAIMS

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X. APPENDIX A - CLAIMS

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is the Assignee, Clarisay, Incorporated.

II. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

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III. STATUS OF THE CLAIMS

Claims 1-7 and 15-21 are pending in this Application.

IV. STATUS OF THE AMENDMENTS

The present Application was filed on January 5, 2001. The Appellants filed a first Amendment on March 28, 2002, in response to an Examiner's Action mailed March 12, 2002. The Examiner entered the first Amendment and subsequently issued a Final Rejection on July 11, 2002. The Appellants then filed a Request for Reconsideration on September 9, 2002. The Examiner indicated, in a subsequent Advisory Action, that the Request for Reconsideration did not place the Application in condition for allowance. The Appellants then filed a Notice of Appeal on November 11, 2002.

V. SUMMARY OF THE INVENTION

The present invention is directed, in general, to surface acoustic wave (SAW) filters and, more specifically, to a module having multi-band SAW circuits and a method of manufacturing such a module. (Abstract) The present invention provides a module, having among other things, first and second SAW circuits located within a shell and respectively couplable to first and second terminal sets, wherein the first and second SAW circuits filter respective first and second signals in respective first and second bands of communication frequencies. (Application: page 8, line 1 thru page 9 line 23).

IN THE ENVIRONMENT OF A PREFERRED EMBODIMENT

An embodiment of the present invention is illustrated in FIGURE 2 of the present Application (set forth herein as Illustration 1). Shown in Illustration 1 is a diagram of an embodiment of a module 200 constructed according to the principles of the present invention. The module 200 includes a hermetically-sealable shell 205 having a first SAW circuit 210 and a second SAW circuit 220 located therein. As illustrated in Illustration 1, the shell 205 may include a common base 230, such as a ceramic common base, that supports the first and second SAW circuits 210, 220. It should be noted, however, the common base 230 may include silicon, a piezoelectric material, or any other suitable material for providing mechanical support, a substrate for formation of integrated circuitry, or both. The common base 230 may be, as illustrated, a separate base formed over a lower portion of the shell 205, or in an alternative embodiment, may be the lower portion of the shell 205. Likewise, it should be noted that the common base 230 may also contain electrical

contacts (not shown), that provide interconnection paths from first and second terminal sets 240, 245 to the first and second SAW circuits 210, 220, respectively.

In the illustrated embodiment, the first SAW circuit 210 is configured to filter signals in a first band of communications frequencies. For example, in an exemplary embodiment, the first SAW circuit 210 may be designed to filter signals in a band of frequencies ranging from about 800 to about 900 megahertz. Such a SAW circuit is similar to a SAW circuit that could be used in a traditional analog communications device.

In contrast, the second SAW circuit 220 is configured to filter signals in a second band of communications frequencies. For example, in an exemplary embodiment, the second SAW circuit may be designed to filter signals in a band of frequencies ranging from about 1800 to about 1900 megahertz. Such frequencies may generally be associated with filters used in conjunction with PCS devices.

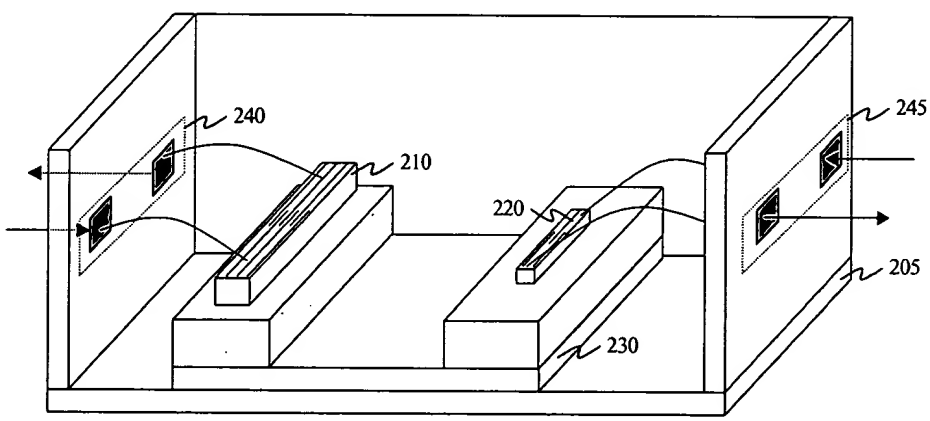

Illustration 1

VI. ISSUE

The issue presented for consideration in this appeal is whether Claims 1-7 and 15-21 are patentably nonobvious in accordance with 35 U.S.C. §103(a) over U.S. Patent No. 5,939,817 to Takado in view of U.S. Patent No. 5,786,738 to Ikata, *et al.* ("Ikata"), and further in view of U.S. Patent No. 5,923,459 to Filipov, *et al.* ("Filipov").

VII. GROUPING OF THE CLAIMS

Claims 1-7 and 15-21 stand or fall together.

VIII. PRIOR ART

A. Takado

Takado is directed to a surface acoustic wave device having improved hermetic sealing and electric conductivity. To achieve these objects and advantages, (referring to FIG. 8 of Takado--set forth herein as Illustration 2), Takado teaches a surface acoustic wave element 11 having an inter digital electrode 12 formed on one surface of a piezoelectric substrate arranged in a recess of a package 13, with the one surface being faced to a bottom surface of the recess of the package 13. Takado further teaches that an elastic conductive pad 35 having pads electrically connected to the electrode of the surface acoustic wave element 11 and electrodes of the package 13 is provided between the one surface of the surface acoustic wave element 11 and the package 13. As is illustrated, the conductive pad 35 includes wiring means 35a, with which it is possible to connect the surface acoustic wave element 11 to the package 13, even when the position of the surface acoustic wave element 11 in which the inter digital electrode is formed is deviated from the position

of the electrodes of the package 13. Takado further teaches that the package 13 includes a cap 30 for pressing down the surface acoustic wave element 11, and that the surface acoustic wave element 11 is mounted on the conductive pad 35 in the package 13 with a surface of the surface acoustic wave element 11 on which the inter digital electrode is formed being down. Therefore, since the package 13 is hermetically sealed by the cap 30 while the surface acoustic wave element 11 being pressed down, the wire bonding becomes unnecessary, causing mounting to be facilitated.

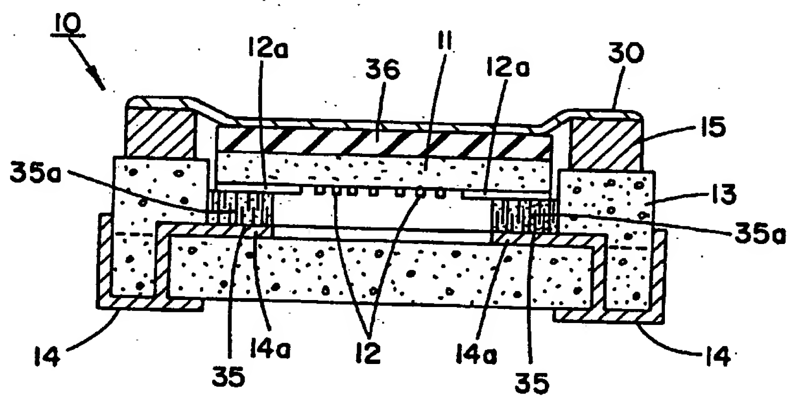

FIG.5

Illustration 2

B. Ikata

Ikata is directed to a surface acoustic wave filter duplexer comprising a multi-layer package and phase matching patterns. (Title). To achieve its objects and advantages, (referring to FIG. 2B of Ikata--set forth herein as Illustration 3), Ikata provides a duplexer 31 embodied by a multi-layer package, the multi-layer package comprising: a predetermined number of surface-acoustic-wave

band pass filter chips 33a, 33b having different pass-band central frequencies; and phase matching circuit patterns 37a-37c provided between the surface-acoustic-wave band pass filter chips 33a, 33b; wherein the phase matching circuit patterns 37a-37c are formed on a surface layer of the multi-layer package. The phase matching circuit patterns 37a-37c may be formed as micro strip lines or as layers containing a copper member. According to the duplexer 31 of the present invention, it is possible to form a phase matching circuit pattern of a low-resistance conductor so that degradation in the reflection coefficient due to the floating capacity is remedied so that degradation in the filter characteristic is suppressed or reduced. Ikata further teaches that the surface-acoustic-wave band pass filter chips 33a, 33b have different central frequencies, for example, the filter chip 33a has a central frequency of 836 MHz, and the filter chip 33b has a central frequency of 881 MHz.

FIG. 2B

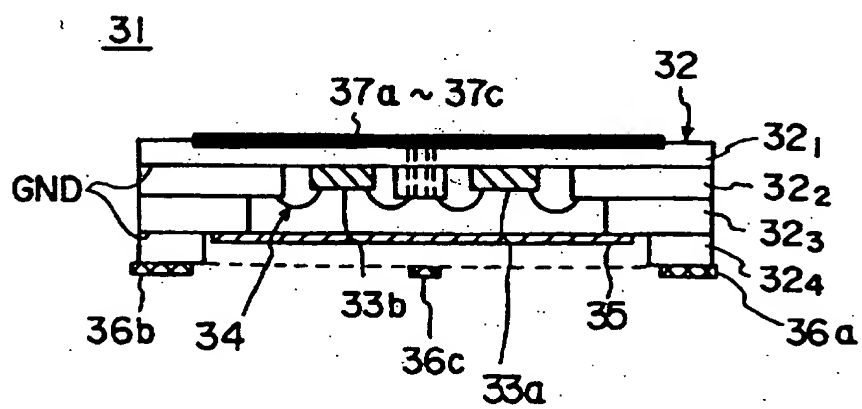

Illustration 3

C. Filipov

Filipov is directed to an accusto-optic time-integrating correlator for processing broadband doppler-shifted signals. (Title). To achieve its objects and advantages, (referring to FIG. 2 of Filipov--set forth herein as Illustration 4), Filipov uses a conical lens telescope 1 to compensate, in one dimension, for the differences in the absolute values of Doppler shift occurring in broadband signals. A laser light beam 11 is expanded to a sheet beam using a conventional beam expander 13. The sheet beam is split and redirected using a modified Koster's prism 15. The two sheet beams 16, 17 are then directed toward a SAW device 18. Signals appearing at the inputs (21 and 22), or the surface waves piezoelectrically induced thereby, interact with the two sheet beams (16 and 17) to shift them up in frequency. (Column 6, lines 46-55). A Doppler-shifted sheet beam 23, 25 and an undiffracted sheet beam 24, 26 result. The Doppler-shifted sheet beam 23, 35 are processed by respective conical lens telescopes 27, 33. The outputs of the conical lens telescopes 27, 33 are combined with associated undiffracted sheet beams 24, 26 and combined by respective modified Koster's prisms 30, 35 and imaged onto respective two-dimensional photodetectors 32, 38.

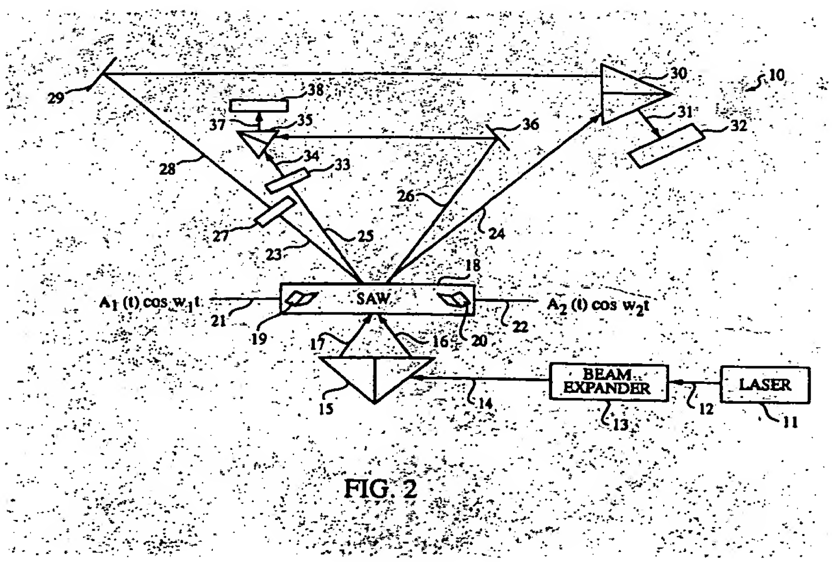

Illustration 4

IX. THE APPELLANTS' ARGUMENTS

The inventions set forth in independent Claims 1 and 15 and their respective dependent claims are neither anticipated by nor obvious over the references on which the Examiner relies.

A. Rejection of Claims 1-7 and 15-21 under 35 U.S.C. §103

The combination of Takado, Ikata and Filipov fails to make obvious Claims 1 and 15 and their dependent claims, because the combination fails to teach or suggest every element of independent Claims 1 and 15. Specifically, the combination of Takado, Ikata and Filipov, fails to teach or suggest the element that first and second SAW circuits are located within a shell and respectively couplable to first and second terminal sets, wherein the first and second SAW circuits filter respective first and second signals in respective first and second bands of communication frequencies, as recited in Claims 1 and 15 of the present application.

As conceded by the Examiner, Takado fails to teach or suggest first and second SAW circuits that filter respective first and second signals in respective first and second bands of communication frequencies. (Examiner's Action dated July 11, 2002, page 2). In addition, however, Ikata also fails to teach or suggest first and second SAW circuits that filter respective first and second signals in respective first and second bands of communication frequencies. Ikata merely appears to teach employing parallel filter chips to split or generate a single signal (Column 1, lines 20-22), wherein the parallel filter chips have different pass-band central frequencies. First, splitting or generating a single signal, as those skilled in the art are well aware, is not considered filtering a signal. Second, the different pass-band central frequencies are not first and second bands of communication

frequencies. A band of communication frequencies, is quite different from a pass-band central frequency.

Because Takado and Ikata independently fail to teach or suggest employing first and second SAW circuits to filter respective first and second signals in respective first and second bands of communication frequencies, the combination of Takado and Ikata also fails to teach or suggest such filtering of first and second signals in respective first and second bands of communication frequencies. Moreover, Filipov fails to cure the deficient teachings of the combination of Takado and Ikata. That is, Filipov also fails to teach or suggest filtering first and second signals via respective first and second SAW circuits in respective first and second bands of communication frequencies, as recited in Claims 1 and 15 of the present application. To the contrary, the Examiner has asserted that Filipov teaches a SAW device (18) with two transducers (19 and 20) that filter a first signal (21) in a first band of communications frequencies and a second signal (22) in a second band of communications frequencies. (Examiner's Action dated July 11, 2002, page 3). However, as disclosed in Filipov and described in detail below, the SAW device (18) merely diffracts two sheet beams (16 and 17) and shifts them up in frequency. (Column 6, lines 53-55). Thus, the SAW device (18) does not filter first and second signals in respective first and second bands of communication frequencies.

As discussed above, the Examiner has asserted that the two transducers (19 and 20) of the SAW device (18) independently filter the first signal (21) and the second signal (22). However, the transducers (19 and 20) do not filter any signals. In contrast, as known to those skilled in the art, the transducers merely convert the signals appearing at the inputs (21 and 22) to surface waves on the SAW device (18). The signals appearing at the inputs (21 and 22), or the surface waves

piezoelectrically induced thereby, interact with the two sheet beams (16 and 17) to shift them up in frequency. (Column 6, lines 46-55). Thus, the signals appearing at the inputs (21 and 22) are not filtered by the transducers (19 and 20). Therefore, the Filipov SAW device (18) and its transducers (19 and 20) do not filter the signals appearing at its inputs (21 and 22), or any other signals, in respective first and second bands of communication frequencies. Accordingly, Filipov fails to teach or suggest filtering first and second signals in respective first and second bands of communication frequencies.

Because Filipov and the combination of Takado and Ikata independently fails to teach or suggest employing first and second SAW circuits to filter respective first and second signals in respective first and second bands of communication frequencies, the combination of Takado, Ikata and Filipov also fails to teach or suggest such filtering of first and second signals in respective first and second bands of communication frequencies. In view of the foregoing remarks, the combination of Takado, Ikata and Filipov fails to support a *prima facie* case of obviousness with respect to Claims 1 and 15 of the present application. In addition, Claims 2-7 and 16-21 are also not obvious in view of the combination of Takado, Ikata and Filipov, because Claims 2-7 and 16-21 are dependent on Claims 1 and 15, respectively.

For the reasons set forth above, the Claims on appeal are patentably nonobvious over the combination of Takado, Ikata and Filipov. Accordingly, the Appellants respectfully request that the

Board of Patent Appeals and Interferences reverse the Examiner's Final Rejection of all of the Appellants' pending claims.

Respectfully submitted,

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X. APPENDIX A - CLAIMS

1. A module, comprising:

a hermetically-sealable shell having first and second terminal sets;

a first surface acoustic wave (SAW) circuit, located within said shell and couplable to said first terminal set, that filters signals in a first band of communications frequencies; and

a second SAW circuit, located within said shell and couplable to said second terminal set, that filters signals in a second band of communications frequencies.

2. The module as recited in Claim 1 wherein said first band of communications frequencies comprises a frequency between about 800 and about 900 megahertz.

3. The module as recited in Claim 1 wherein said second band of communications frequencies comprises a frequency between about 1800 and about 1900 megahertz.

4. The module as recited in Claim 1 wherein said shell comprises a common base that supports said first and second SAW circuits.

5. The module as recited in Claim 1 further comprising a lid coupled to said shell to form a hermetic enclosure that surrounds said first and second SAW circuits.

6. The module as recited in Claim 1 wherein said first and second SAW circuits are located on a common piezoelectric substrate.

7. The module as recited in Claim 6 further comprising a crosstalk shield located between said first and second SAW circuits.

15. A module, comprising:

a hermetically-sealable shell having first and second terminal sets;

a first surface acoustic wave (SAW) circuit, located within said shell and couplable to said first terminal set, that filters signals in a first band of communications frequencies;

a second SAW circuit, located within said shell and couplable to said second terminal set, that filters signals in a second band of communications frequencies; and

a lid coupled to said shell and forming an enclosure that surrounds said first and second SAW circuits.

16. The module as recited in Claim 15 wherein said first band of communications frequencies comprises a frequency between about 800 and about 900 megahertz.

17. The module as recited in Claim 15 wherein said second band of communications frequencies comprises a frequency between about 1800 and about 1900 megahertz.

18. The module as recited in Claim 15 wherein said shell comprises a common base that supports said first and second SAW circuits.

19. The module as recited in Claim 15 wherein said enclosure is hermetic.

20. The module as recited in Claim 15 wherein said first and second SAW circuits are located on a common piezoelectric substrate.

21. The module as recited in Claim 20 wherein a crosstalk shield is located between said first and second SAW circuits.